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Bernd S.W. Schroeder* (schroder@coes.LaTech.edu), Program of Mathematics and Statistics, Louisiana Tech University, Ruston, LA 71272. *Recurring Concepts in the (Engineering) Mathematics Sequence: Error Estimates*. Preliminary report.

In any mathematical curriculum certain concepts have to be taught earlier than others to maintain logical consistency. Yet there are important ideas that cannot be presented as a block in such a sequence, as they surface at several places. Students often do not see that the same idea is revisited from different angles when a topic reoccurs after some time. In this paper we identify several such topics. We will then focus on one of them, namely error estimates. This topic occurs in numerical integration, sequences and series as well as in basic statistics. The topic carries with itself a whole philosophy on experimental design and interpretation of data, which is important in science and engineering. It is also the first exposure to managing errors and uncertainty in mathematics. We will present the similarity of topics and analyze students' performance on similar tasks. Data will be presented for two student cohorts spanning two quarters each in Louisiana Tech's integrated engineering curriculum. The performance data will be used to identify the main challenges in this topic. Comparison between the cohorts (differently taught) will be used to identify ways to meet these challenges. (Received July 17, 2000)